

ABSTRACT

A throttle device comprises a tubular outer sleeve having a plurality of outer sleeve circumferential grooves formed on an outer sleeve inner surface and intersecting a plurality of outer sleeve axial grooves formed on an outer sleeve outer surface to form outer sleeve orifices. Also included is a tubular inner sleeve concentrically disposed within the outer sleeve and having a plurality of inner sleeve circumferential grooves formed on an inner sleeve inner surface. A plurality of inner sleeve axial grooves are formed on the inner sleeve outer surface and intersect the inner sleeve circumferential grooves to form inner sleeve orifices. The offset inner and outer sleeve orifices define tortuous flow paths wherein fluid flows into the outer sleeve axial grooves, through the outer sleeve orifices, through the outer sleeve circumferential grooves, through the inner sleeve axial grooves, through the inner sleeve orifices before exiting the inner sleeve circumferential grooves.